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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/451,319	11/30/1999	ROBERT M. MOORE JR.	SU-7073-D	8868

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ALBEMARLE CORPORATION
PATENT DEPARTMENT
451 FLORIDA STREET
BATON ROUGE, LA 70801

EXAMINER

PRYOR, ALTON NATHANIEL

ART UNIT	PAPER NUMBER
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1616

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02/18/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/451,319	Applicant(s) MOORE ET AL.	
	Examiner ALTON N. PRYOR	Art Unit 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 131-151 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 131-151 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments filed 12/17/09 have been fully considered but they are not persuasive. Previous rejections and objections not addressed below are withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 131-151 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodenough (3,558,503; 1/26/07) in view of Dallmier and McKinnie declaration.

Goodenough teaches a method of producing an aqueous solution having bromine values of about 0.01 to about 100,000 ppmw useful for bleaching processes, treating swimming pools and disinfecting processes (column 1 lines 13-61). Goodenough teaches a method of producing an aqueous bromine solution comprising providing an aqueous solution of bromine and contacting therewith a bromine stabilizer such as sulfamic acid plus an amount of hydroxide such as magnesium hydroxide sufficient to achieve a final pH ranging from about 8 to about 10 (column 2 lines 1-40). Note, the mixing of magnesium hydroxide with sulfamic acid result in an alkaline metal salt of sulfamic acid which is functionally equivalent to the instant alkali metal salt (sodium) of sulfamic acid. According to Moore's own expert, Dr. McKinnie, the reaction taught in Goodenough would be exothermic. Goodenough also teaches that the molar ratio of bromine to nitrogen (Br₂:N₂) ranges from about 2 to about 0.5, which would have indicated to

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an artisan that the atomic ratio of nitrogen to active bromine (N:Br) ranges from about 0.5 to about 2 (column 1 lines 66-69).

Goodenough's method of making a final solution having a bromine content of about 100,000 ppmw differs from the method recited in Moore's claim 61 in the pH of the resulting biocide composition. That is, Goodenough's method yields a biocide having a pH of from about 8 to about 10 (Example 3) whereas Moore's claimed method yields in a biocide having a pH ranging from 12.0 to 14.0. Thus, as pointed out by Moore, "the question is whether the prior art provided that motivation to modify the method of Goodenough with a reasonable expectation of success". The record indicates that the answer is affirming.

Dallmier discloses a process that "improves on the Goodenough et al. reference by means of a safer, easier, and more economical process." (column 2 lines 45-47). As confirmed by Moore's own expert, Dallmier suggests that a sulfamic acid stabilized hypobromite such as N-bromosulfamate can be stored in a high pH solution ranging from about 8 to about 14 and more preferably from about 11 to about 14 with minimal suspected carcinogen bromate formation. (column 3 lines 28-3; column 4 lines 47-49; column 9 line 65 – column 10 line 60). As taught by Dallmier, the formation of bromate occurs from a reaction involving hypobromite as a reactant and stabilized hypobromite (column 3 lines 24-26; column 10 lines 1-8).

Hence, an artisan would have been motivated to combine the teachings of Goodenough and Dallmier. It would have been obvious to modify Goodenough's process to include a step of increasing the pH of the final solution to 12-14 as indicated in Dallmier in order to minimize the formation of the suspected carcinogen bromate during storage, thus arriving at a method encompassed by Moore's claims 61-65.

The subject matter of Moore's claim 64 is made obvious in view of the prior art. Claim 64 recites an active bromine content of "at least about 100,000 PPM (wt/wt)" and an atomic ratio of nitrogen to active bromine of "greater than 1," which is made obvious over the prior art, because the prior art ranges overlap the claimed ranges.

Response to Applicants' argument

Applicants argue that McKinnie compares the amounts of N-bromosulfamate and N-chlorosulfamate produced when using bromine chlorine versus bromine and chlorine. The instant claims employ bromine, not bromine chloride or bromine and chlorine. The Examiner points out that the 3rd line of claim 131 employs the term "containing" which allows for the inclusion of bromine chloride or bromine and chlorine. Independent claims 135 and 142 line 2 employs the term "comprises" which allows for the inclusion of bromine chloride or bromine and chlorine.

The Applicants argue that Goodenough and Dallmier disclose incompatible processes for forming halogen-based biocidal solutions. In Goodenough addition steps are not critical. In Goodenough, the halogen is added to the solution second or last. On the other, Dallmier discloses that the addition steps are critical. In Dallmier, the halogen is added first. In both Dallmier and Goodenough the base is added last to attain their wanted pH. Dallmier teaches that the base should be added last and supports that it is unfavorable to conduct processes for formation of the biocide at elevated pH values. Dallmier supports that bromine value should be stabilized prior to base addition. Applicants argue that Goodenough and Dallmier use different bromine sources. Dallmier teaches away from the combination with Goodenough. The Examiner argues that it is important to note that one of the main reasons for employing Dallmier is to provide the motivation for arriving at biocidal composition having a pH ranging from 12 to 14. For this

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reason it would have been obvious to employ the teaching of Dallmier to raise the pH of Goodenough's compositions to 12 to 14 to avoid carcinogen bromate formation. No data has been provided by the Applicants with respect to the significance of the instant ordering of steps in the formation of the liquid biocide.

Applicants argue that Goodenough and Dallmier use different bromine sources. Dallmier teaches away from the combination with Goodenough.

The Applicants argue that claim 131 makes clear that the product formed is produced from a process consisting of the step of cofeeding into a reactor comprising specified materials so that in effect, at all times during and after the feeding the pH of the formulation exits always at about 12 to about 14, i.e. the pH is obtained solely in the preparation process as claimed. The Applicants argue that claims 131-134 present a completely different scenario from that upon which the Board's Findings of Fact and Conclusions of Law were based, i.e. previous claims 61-65 (now cancelled claims 61-65) employed "comprising" language which permitted the inclusion of additional active step(s) such as the modification of Goodenough's process to include a further step of increasing the pH of the solution from 8-10 to 12-14 as suggested by Dallmier to avoid the production of carcinogen bromate. Now turning to Instant claims 131-134 employing "consists of" language, an artisan in the field would not have been expected to modify the Goodenough's process to include the additional step of increasing the pH of the solution to 12-14 as suggested by Dallmier in order to reduce the formation of potentially carcinogen bromate during storage to arrive at the instant invention since the "consists of" language closes the claims. Dallmier and Goodenough teach separate feeding lines. The Examiner reiterates that after reading Goodenough in light of Dallmier an artisan in the field would have been motivated to

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carry a process of producing a biocide in the single step of cofeeding into a reactor comprising sulfamic acid, water and magnesium hydroxide (i) bromine and (ii) an alkali metal solution to maintain the pH at about 12 to about 14. One would have been motivated to do this in a single step to avoid carcinogenic bromate formation. The number of feeding lines is a experimental design choice. One skilled in the art would know that several feeding line scenarios could be employed to produce the instant liquid biocide composition.

New claims 135-151 include static mixing, mechanical stirring, withdrawing product intermittently and using multiple reaction vessels. The prior art does not teach these steps. It would have been obvious to include steps of mechanical stirring, static mixing, removing product intermittently and using multiple reaction vessels at the time of the prior art invention. One would have been motivated to do include the steps in a pilot or commercial process in order to obtain high production rates.

Telephonic Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALTON N. PRYOR whose telephone number is (571)272-0621. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alton N. Pryor/

Primary Examiner, Art Unit 1616